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ABSTRACT

Free verbal responses to pictures as an indication of cognitive style were studied for 199 college students, at Eastern Kentucky University. The Group Embedded Figures Test (GEFT) was administered following presentation of the pictures, a series of colored pictures of simple, medium and complex configuration. Responses given to three graduate student judges were classified as specific (related to something in the picture) or general (related to something not seen). Multiple chi square analyses explored relationships of cognitive style, sex, and picture complexity to the number of general and specific responses. Males made significantly fewer general and more specific responses than expected, while females made more general and fewer specific responses than expected. Males and females did not differ in response to picture complexity, and field-dependent and field-independent subjects did not differ significantly in the number of general and specific responses. There was a significant interaction between sex and picture complexity for field-dependent subjects, with males giving more general and fewer specific responses than expected for complex pictures, and females giving fewer general and more specific responses. No interaction between sex and picture complexity was found for field independent subjects. Results indicate the complex interactions of sex and cognitive style. Two tables and three figures present analysis results. (Contains 14 references.) (SLD)

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COGNITIVE STYLE INFLUENCE IN REACTING TO PICTURES

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Literature regarding the cognitive styles referred to as field dependent (FD) and field independent (FI) indicates that the visual field of a person influences behavior (e.g., Witkin, 1950, 1979; Witkin & Goodenough, 1981; Witkin, Moore, Goodenough & Cox, 1977; Witkin, Goodenough & Karp, 1967). Witkin found a tendency to use the body and/or the visual field as referents, that is, to rely primarily on external referents or on the self in psychological functioning, and suggested that this is not just a disembedding ability alone. However, the disembedding ability has been widely used to earmark field dependents-independents through use of various tests, e.g., the Embedded Figures Test (EFT) and Group Embedded Figures Test (GEFT).

On the EFT and GEFT, field dependents are those who score low in "disembedding" meaning they have difficulty finding a simple figure within a more complex figure) and field independents are those who score high (meaning they easily locate the simple figure within a complex figure). According to the theory, a person is consistent in his/her strategy (e.g., Camillus, 1975).

The two strategies apparently used by FDs and FIs, according to Goodenough (1976) are: (w)holistic/global, which is the strategy of field dependents, and partist/analytical, which is the strategy of field independents. In holistic strategy all attributes of a stimulus become relevant. In the partist/analytical strategy, only part of the attributes are used. Not all visual information is salient--some is irrelevant, so selecting pieces of information can be an important learning strategy. Given the analytical strategy, then, it's not surprising that some studies show field independents better at concept attainment than field dependents, particularly when material is non-structured (DeBaisio, 1986, e.g.). When learning material is structured in an organized form, then the two types are not likely to differ in learning (Witkin, Moore, Goodenough & Cox, 1977).

Field independents (FIs) apparently tend to separate elements--to think analytically--while field dependents are more likely to accept information as it is and tend to fuse elements together. Apparently the greater the ambiguity in the testing situation, the greater the field dependency effect. In this situation, the FI person can select relevant information embedded in a larger context and can "resist" the interfering effects of the context information. Holistic learners (FDs) apparently utilize a global approach where superordinate characteristics have meaning within some total context. If a picture/scene/event appears logical and organized, apparently FDs see no need to do much analysis or structuring. Main differences seem to be found when FDs are required to select out a part of what they're perceiving.

Sex differences are ample in developmental literature (e.g., Maccoby & Jacklin, 1974), and in more recent studies are still found in both young children n and adolescents and adults (Pearson & Ferguson, 1989; Drane et al., 1989; Ehrman & Oxford, 1988, e.g.). Witkin found a sex difference but the difference was small between the sexes relative to the larger variability within gender.

Studies using responses to pictures have been done in various ways: Conklin, Muir & Boersma (1968) recorded eye fixations of subjects looking at pictures; others recorded eye

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movements (e.g., Harley, Kalish & Silverman, 1974); others used written responses to questions about visuals (e.g., Steinmetz, 1968; Pellegreno & Stickle, 1979); Rapaczynski (1978) made EEG recordings of brain activity as subjects viewed pictures of faces, and so on. However, what seemed lacking in the literature was the study of free verbal responses to pictures.

METHODOLOGY

Subjects were 199 students at Eastern Kentucky University, who were tested by intact class groups. Both undergraduates and graduates were in the sample. The GEFT was administered following the presentation of the pictures in order to avoid any test anxiety confounding the responses to the pictures. Using the upper and lower quartiles of the GEFT scores resulted in 50 subjects classified as FD and 50 as FI. Statistics were done on these subjects. GEFT score range was 0-18 (FD Mean=3.36; FI Mean=16.24; FD range=0-6; FI range=14-18).

The visual set was a series of colored pictures on 35mm slides. Three classes of complexity were used: Simple (l-figure pictures), Medium (2-figure pictures), and Complex (3-or-more figures). Prior to the study 60 pictures were shown to 50 other students who were asked to give free written responses to each picture. All the responses were given independently to three graduate students who served as judges and rated each response as to whether the word denoted something that could be seen in the picture (a "specific" response) or whether the word connoted something that couldn't be seen (a "general" response). Response words used in the study were those which all judges rated the same. Two specific responses and two general responses were needed for each picture on the forced-choice response sheet, so any picture not meeting this criterion was eliminated. The final 36 pictures and responses were used in the study. The set of slides were randomly organized, using a table of random numbers, into two presentation sets, with equal numbers of people, animal, and object pictures. Each picture's 4 response words were listed randomly under the picture.

A Kodak Ektagraphic slide projector, Model AF-2, with an automatic timer, presented the pictures on a 60" x 70" screen. Following the pictures, the GEFT was administered and timing was done with a stopwatch. This entire procedure took about 45 minutes.

RESULTS AND CONCLUSIONS

Multiple Chi Square Analyses, with Yates Correction for Continuity for all 2x2 tables, were used to analyze the relationship of cognitive style, sex, and picture complexity to the number of general and specific responses. Males and females in this study did not differ in field dependence - independence. Based on Witkin's (1962) research, a difference was expected in cognitive style between sexes. The sex distribution in the sample may have affected the outcome since there were twice as many female subjects (n=68) as male subjects (n=32).

Overall differences in sex were found for general and specific responses. Males made significantly fewer general and more specific responses than expected, while females made significantly more general and fewer specific responses than expected. However, males and

females did not differ in their responses to the several levels of picture complexity. Overall, field dependent subjects did not differ significantly from field independent subjects in the number of general and specific responses made to the pictures. There were no significant differences between field dependents and field independents in their responses to picture complexity. This is not consistent with the findings in the Frost & Lander (1980) study where they found significant differences in the responses of field dependents and field independents to simple and complex stimuli. Further evaluation of the interaction of sex and picture complexity with cognitive style did yield some interesting results.

Table I shows a significant interaction between sex and picture complexity for field dependent subjects. Field dependent males gave significantly more general and fewer specific responses than expected to the complex pictures. Field dependent females gave significantly fewer general and more specific responses than expected to the complex pictures. No significant differences were found in the responses to the simple and medium pictures for either field dependent males or females. No interaction appears between sex and picture complexity for field independent subjects. As seen in Table I, field independent males gave significantly fewer general and more specific responses than expected to all pictures while field independent females gave significantly more general and fewer specific responses than expected to pictures at all complexity levels.

Table I. General-Specific Responses Relative to Expected Frequencies by Cognitive Style, Sex, and Picture Complexity

		Simple Pictures		Medium Pictures		Complex Pictures	
		General	Specific	General	Specific	General	Specific
Field-Dependent	Males	More^{NS}	Fewer^{NS}	Same^{NS}	Same^{NS}	More*	Fewer*
	Females	Fewer^{NS}	More^{NS}	Same^{NS}	Same^{NS}	Fewer*	More*
Field-Independent	Males	Fewer*	More*	Fewer*	More*	Fewer*	More*
	Females	More*	Fewer*	More*	Fewer*	More*	Fewer*

*Significant difference in expected and observed frequency of responses $\chi^2 \leq .05$ NS - Not Significant

Table II clearly shows a significant interaction between sex and cognitive style. Field dependent males and field independent females gave significantly more general and fewer specific responses than expected to pictures at all complexity levels. Field independent males and field dependent females made significantly fewer general and more specific responses than expected to pictures at all complexity levels.

Table II. General-Specific Responses Relative to Expected Frequencies by Sex and Cognitive Style for All Levels of Picture Complexity (Simple-Medium-Complex)

		GENERAL	SPECIFIC
MALES	Field-Dependent	More*	Fewer*
	Field-Independent	Fewer*	More*
FEMALES	Field-Dependent	Fewer*	More*
	Field-Independent	More*	Fewer*

*Significant difference in expected and observed frequency of responses $\chi^2 \leq .05$

It was expected that field dependents would utilize a holistic strategy; i.e., that they would consider all the visual attributes present as being relevant and thus make more general responses. It was also expected that field independents would utilize a partist strategy which supposedly considers only some of the attributes (Goodenough, 1976), and thus make more specific responses. This pattern was obtained for males but the opposite occurred for females, similar to the findings regarding females in the Tobacyk, Myers & Bailey (1981) study.

It appears that the cognitive style (field dependence - independence) and sex of viewers importantly affect their responses to pictures. Support for Witkin's (1954, 1962) theory in the present study was tenuous -- consistency for males seemed apparent, but results for females were opposite to expectations. Further theoretical work seems indicated for future research using this approach. The interactions of sex and cognitive style are apparently more complex and more important than previous work has suggested. These factors need to be investigated with reference to responses to pictures. Other picture variables, e.g., color vs black - white, picture backgrounds and subject matter of the pictures would be worth investigating relative to specific - general responses.

REFERENCES

Camillus, M.J. (1975). An investigation of the relationships among field-dependence/field independence, sex, and concept identification strategy. (Doctoral dissertation, University of Pittsburgh). Dissertation Abstracts International, 33, 3931-B. (University Microfilms No. 73-4145, 80).

Conklin, R.C.; Muir, W., & Boersma, F. (1968). Field dependency-independency and eye-movement patterns. Perceptual and Motor Skills, 26, 59-65.

Drane, M.J.; Halpin, G.M.; Halpin, W.G.; vonEschenbach, J.F. & Worden, T.W. (1989). Relationships between reading proficiency and field dependence/field independence and sex. Educational Research Quarterly, 13(2), 2-10.

Ehrman, M. & Oxford, R. (1988). Effects of sex differences, career choice, and psychological type of adult language learning strategies. The Modern Language Journal, 72, iii, 253-265.

Harley, J.; Kalish, D. & Silverman, A. (1974). Eye movements and sex differences in field articulation. Perceptual and Motor Skills, 38, 615-622.

Pearson, J.L. and Ferguson, L.R. (Summer, 1989). Gender differences in patterns of spatial ability, environmental cognition, and math and English achievement in late adolescence. Adolescence, 24, 421-431.

Pellegreno, D. & Stickle, F. (1979). Field dependence-field independence and labeling of facial effect. Perceptual and Motor Skills, 48, 489-490.

Rapaczynski, W.G. (1978). Hemispheric involvement in face recognition as a function of stimulus orientation and field articulation. (Doctoral dissertation, City University of New York). Dissertation Abstracts International, 38, 1223-1235.

Steinmetz, A. (1968). Perceptual style and response to single concept science films. Unpublished doctoral dissertation, Indiana University.

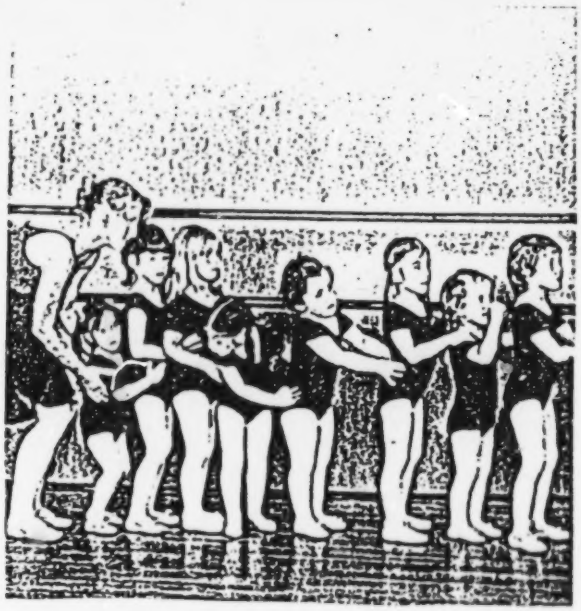
Witkin, H.A. (1950). Individual differences in ease of perception of embedded figures. Journal of Personality, 19, 1-15.

Witkin, H.A. (1979). Socialization, culture and ecology in the development of group and sex differences in cognitive style. Human Development, 22 (5), 358-372.

Witkin, H. & Goodenough, D. (1981). Cognitive styles: Essence and origins. New York: International Universities Press.

Witkin, H.; Goodenough, D. & Karp, S. (1967). Stability of cognitive style from childhood to young adulthood. Journal of Personality and Social Psychology, 7, 291-300.

Witkin, H.; Moore, C.; Goodenough, D. & Cox, P. (1977). Field-dependent and field-independent cognitive styles and their educational implications. Review of Educational Research, 47, (1), 1-64.



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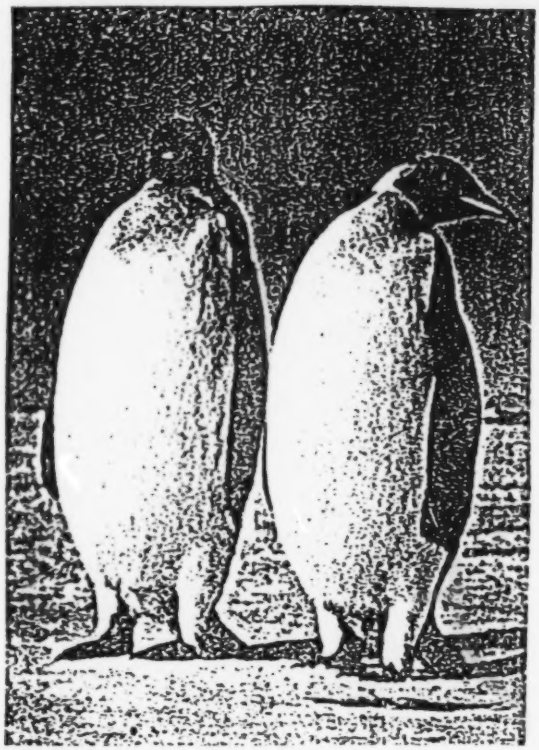

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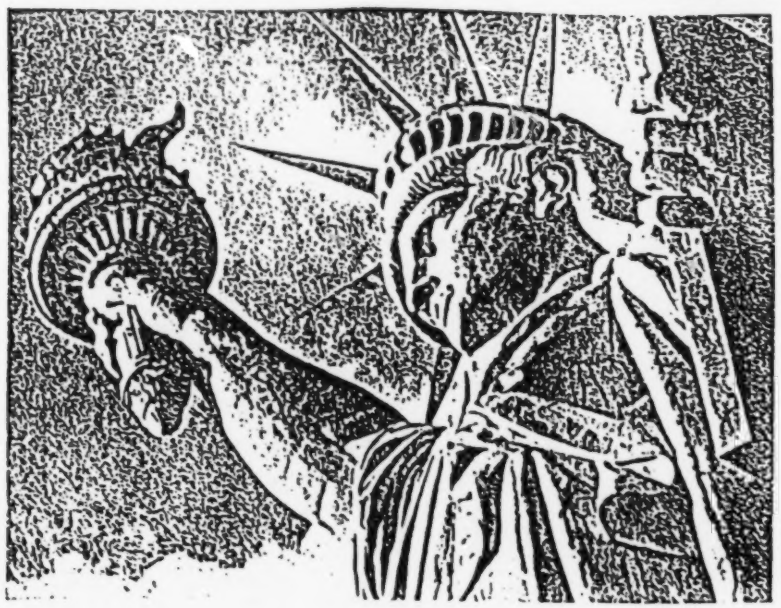

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